Resources to Support Broadband Planning

Agenda

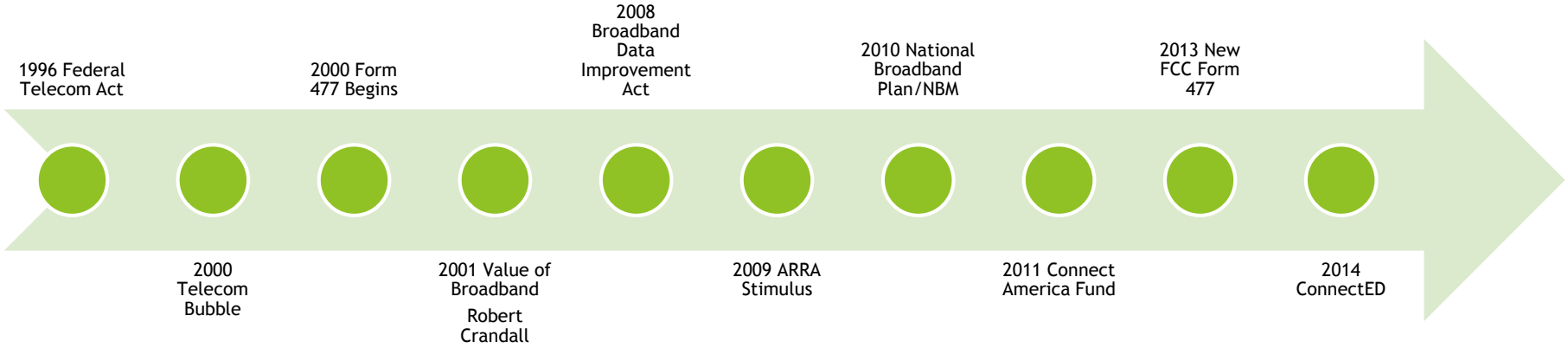
Several goals

a) Understanding where some of the most important data sources for broadband information are located
b) Understanding why those data sources are the way they are
c) Estimating what policy areas in the future will be the most active in generating information; and,
d) Knowing where new information can be found and some of the lingo to find it.

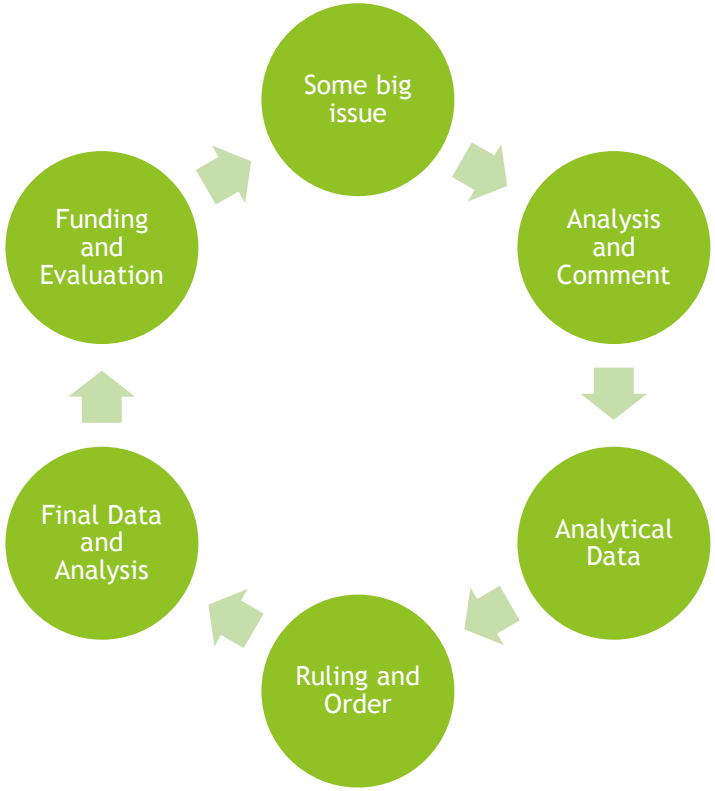
Caution

- My goal is to summarize some key areas. Or, what I think are key areas
- BUT, this is my opinion.
- It is not representative of the Public Service Commission, USAC, FCC or any clients
- And, there are other important data sources available especially at the State level which I unfortunately won't have much time to get into

Big events in Broadband Development



When big things happen, they follow a well-worn path



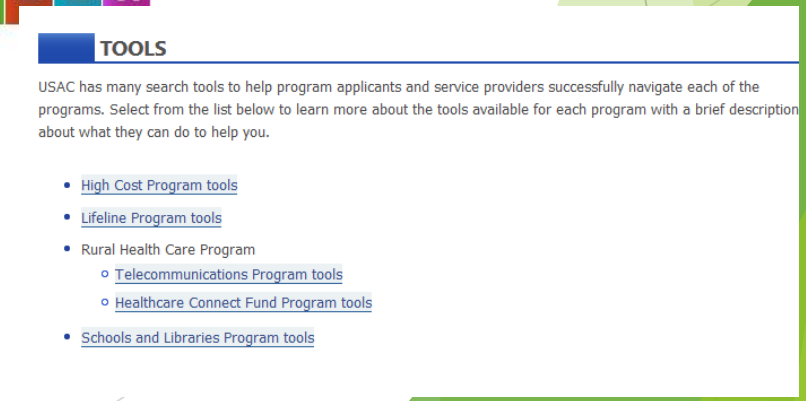
Telecommunications Act of 1996

- It represented the first major overhaul in 60 years
- Provided significant roles to the FCC and State Regulators
- Supported competition in telecom; used UNEs to allow competitors to gain access to network facilities
  - Promote the availability of quality services at just, reasonable and affordable rates for all consumers
  - Increase nationwide access to advanced telecommunications services
  - Advance the availability of such services to all consumers, including those in low income, rural, insular, and high cost areas, at rates that are reasonably comparable to those charged in urban areas
  - Increase access to telecommunications and advanced services in schools, libraries and rural health care facilities
  - Provide equitable and non-discriminatory contributions from all providers of telecommunications services to the fund supporting universal service programs

Telecommunications Act of 1996 (continued)

- Supported Public Interest through Universal Service
  - High Cost
  - Low Income
  - Rural Health
  - Schools and Libraries
- Universal Service Administrative Company was established as funding entity

USAC



TOOLS

USAC has many search tools to help program applicants and service providers successfully navigate each of the programs. Select from the list below to learn more about the tools available for each program with a brief description about what they can do to help you.

- High Cost Program tools
- Lifeline Program tools
- Rural Health Care Program
  - Telecommunications Program tools
  - Healthcare Connect Fund Program tools
- Schools and Libraries Program tools

Finding the money

FUNDING DISBURSEMENT SEARCH

The High Cost data disbursement search tool can be used to search High Cost Program The tool provides for multiple search criteria to locate data for any month beginning wi state, study area, or service provider identification number. Use multiple criteria to nar

If you are searching by Study Area Name, please refer to the FCC Filings and use the r Area) to find the Study Area's proper name. Any required data can be viewed in HTML High Cost disbursement data is updated monthly.

The retrieved data are broken down by High Cost Program and Connect America Fund Interstate Access Support (IAS), Interstate Common Line Support (ICLS), Local Switch with ICLS in July 2004. It also includes two HCL sub-components: Safety Net Additive (include Frozen High Cost Support (FHCS), Incremental Support (IS), Connect America and Connect America Cost Model (CACM).

SPIN:	
Study Area Code:	
Study Area Name:	
Year:	2014
Month:	ALL
State:	WI
◉ View in HTML ○ View in Excel	
This disbursement tool contains data from Jan 2003 through May 2014.	
Find Clear	

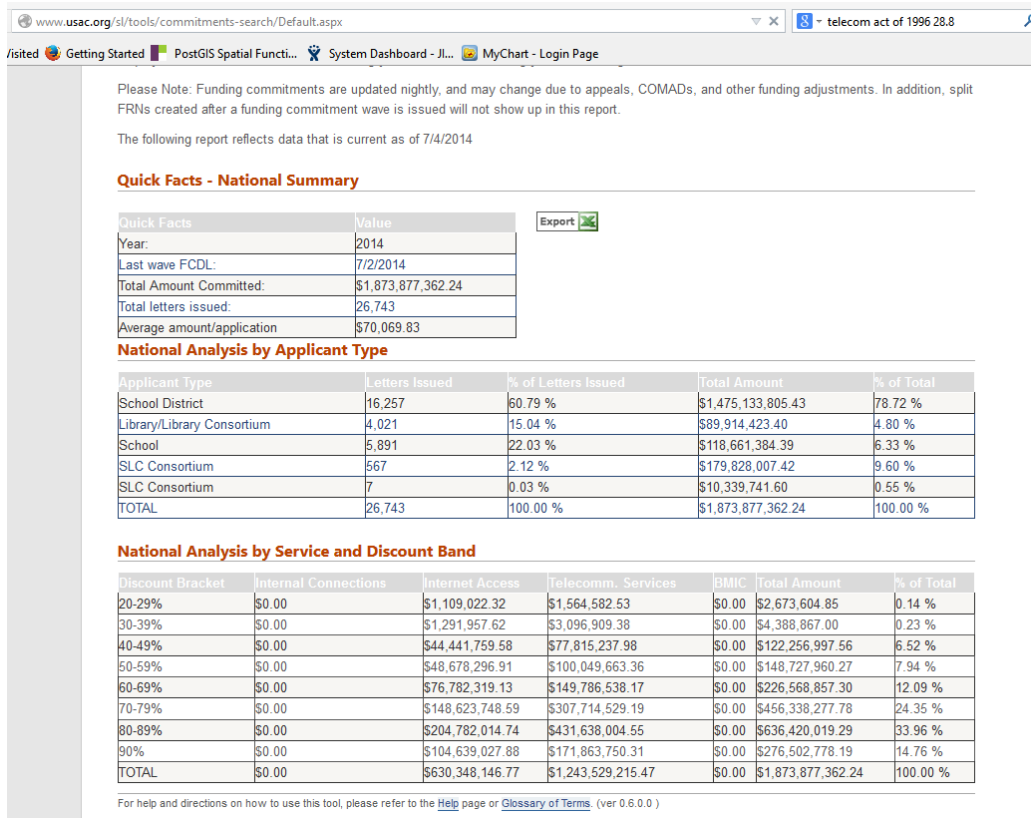
FUNDING DISBURSEMENT SEARCH RESULTS

SPIN=Service Provider ID Number; HCL=High Cost Loop; HCM=High Cost Model; IAS=Interstate Access Support; ICLS=Interstate Common Line Support; LSS=L Switching Support; LTS=Long Term Support; SNA=Safety Net Additive Support; SVS=Safety Valve Support; FHCS=Frozen High Cost Support; IS=Incremental Support; ICC=Connect America Fund Intercarrier Compensation; Mobility I=Mobility Fund Phase One; CACM =Connect America Cost Model.

High Cost Disbursement Data (Spin = ALL , Sac = ALL , San = ALL , Year = 2014 , Month = ALL , State = WI)
This disbursement tool contains data from Jan 2003 through May 2014.

State	Spin	Study Area Code	Study Area Name	HCL	HCM	IAS	ICLS	LSS	LTS	SNA	SVS	FHCS	IS	ICC	Mobility I	CACM	Year	Month
WI	143001819	330841	CENTURYTEL-MW-WI(CENCOM)	$0	$0	$0	$0	$0	$0	$0	$0	$135,743	$0	$0	$0.00	$0	2014	May
WI	143001769	330842	AMERY TELCOM, INC.	$0	$0	$0	$52,824	$0	$0	$0	$0	$0	$0	$19,419	$0.00	$0	2014	May
WI	143001770	330843	AMHERST TEL CO	$0	$0	$0	$44,910	$0	$0	$0	$0	$0	$0	$16,702	$0.00	$0	2014	May
WI	143001771	330844	BADGER TELECOM, INC.	$0	$0	$0	$36,390	$0	$0	$0	$0	$0	$0	$26,920	$0.00	$0	2014	May
WI	143001772	330846	BALDWIN TELECOM	$0	$0	$0	$36,165	$0	$0	$0	$0	$0	$0	$15,933	$0.00	$0	2014	May
WI	143001773	330847	BELMONT TEL CO	$760	$0	$0	$8,083	$0	$0	$0	$0	$0	$0	$1,617	$0.00	$0	2014	May
WI	143001774	330848	BERGEN TEL CO	$2,527	$0	$0	$3,915	$0	$0	$0	$0	$0	$0	$2,218	$0.00	$0	2014	May
WI	143001775	330849	BLACK EARTH TEL CO	$0	$0	$0	$11,481	$0	$0	$0	$0	$0	$0	$1,414	$0.00	$0	2014	May
WI	143001776	330850	BLOOMER TEL CO	$26,144	$0	$0	$42,227	$0	$0	$7,373	$0	$0	$0	$15,775	$0.00	$0	2014	May
WI	143001777	330851	BONDUEL TEL CO	$0	$0	$0	$13,531	$0	$0	$0	$0	$0	$0	$6,152	$0.00	$0	2014	May
WI	143001778	330855	BRUCE TEL CO, INC	$0	$0	$0	$12,764	$0	$0	$0	$0	$0	$0	$7,436	$0.00	$0	2014	May
WI	143001779	330856	BURLINGTON B&W	$0	$0	$0	$23,038	$0	$0	$0	$0	$0	$0	$5,937	$0.00	$0	2014	May
WI	143001819	330857	CENTURYTEL-MW-WI(CASCO)	$0	$0	$0	$0	$0	$0	$0	$0	$8,438	$0	$0	$0.00	$0	2014	May
WI	143001782	330859	CENTRAL STATE TEL CO	$0	$0	$0	$70,638	$0	$0	$0	$0	$0	$0	$30,517	$0.00	$0	2014	May
WI	143001783	330860	CHEQUAMEGON COM COOP	$316,417	$0	$0	$206,703	$0	$0	$0	$0	$0	$0	$53,017	$0.00	$0	2014	May

Schools and Libraries


www.usac.org/sl/tools/commitments-search/Default.aspx

telecom act of 1996 28.8

/isited Getting Started PostGIS Spatial Functi... System Dashboard - Jl... MyChart - Login Page

Please Note: Funding commitments are updated nightly, and may change due to appeals, COMADs, and other funding adjustments. In addition, split FRNs created after a funding commitment wave is issued will not show up in this report.

The following report reflects data that is current as of 7/4/2014

Quick Facts - National Summary

Export

Quick Facts	Value
Year:	2014
Last wave FCDL:	7/2/2014
Total Amount Committed:	$1,873,877,362.24
Total letters issued:	26,743
Average amount/application	$70,069.83

National Analysis by Applicant Type

Applicant Type	Letters Issued	% of Letters Issued	Total Amount	% of Total
School District	16,257	60.79 %	$1,475,133,805.43	78.72 %
Library/Library Consortium	4,021	15.04 %	$89,914,423.40	4.80 %
School	5,891	22.03 %	$118,661,384.39	6.33 %
SLC Consortium	567	2.12 %	$179,828,007.42	9.60 %
SLC Consortium	7	0.03 %	$10,339,741.60	0.55 %
TOTAL	26,743	100.00 %	$1,873,877,362.24	100.00 %

National Analysis by Service and Discount Band

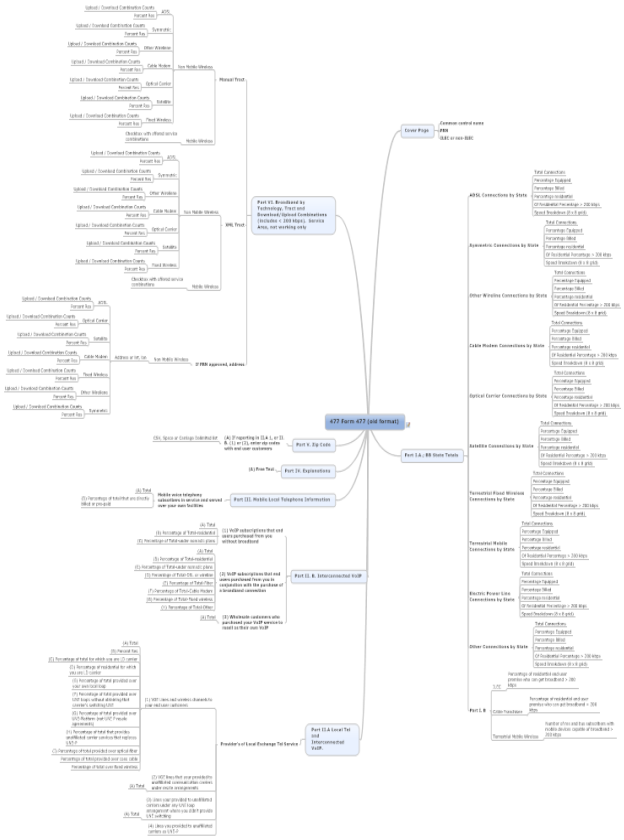
Discount Bracket	Internal Connections	Internet Access	Telecomm. Services	BMIC	Total Amount	% of Total
20-29%	$0.00	$1,109,022.32	$1,564,582.53	$0.00	$2,673,604.85	0.14 %
30-39%	$0.00	$1,291,957.62	$3,096,909.38	$0.00	$4,388,867.00	0.23 %
40-49%	$0.00	$44,441,759.58	$77,815,237.98	$0.00	$122,256,997.56	6.52 %
50-59%	$0.00	$48,678,296.91	$100,049,663.36	$0.00	$148,727,960.27	7.94 %
60-69%	$0.00	$76,782,319.13	$149,786,538.17	$0.00	$226,568,857.30	12.09 %
70-79%	$0.00	$148,623,748.59	$307,714,529.19	$0.00	$456,338,277.78	24.35 %
80-89%	$0.00	$204,782,014.74	$431,638,004.55	$0.00	$636,420,019.29	33.96 %
90%	$0.00	$104,639,027.88	$171,863,750.31	$0.00	$276,502,778.19	14.76 %
TOTAL	$0.00	$630,348,146.77	$1,243,529,215.47	$0.00	$1,873,877,362.24	100.00 %

For help and directions on how to use this tool, please refer to the Help page or Glossary of Terms. (ver 0.6.0.0)

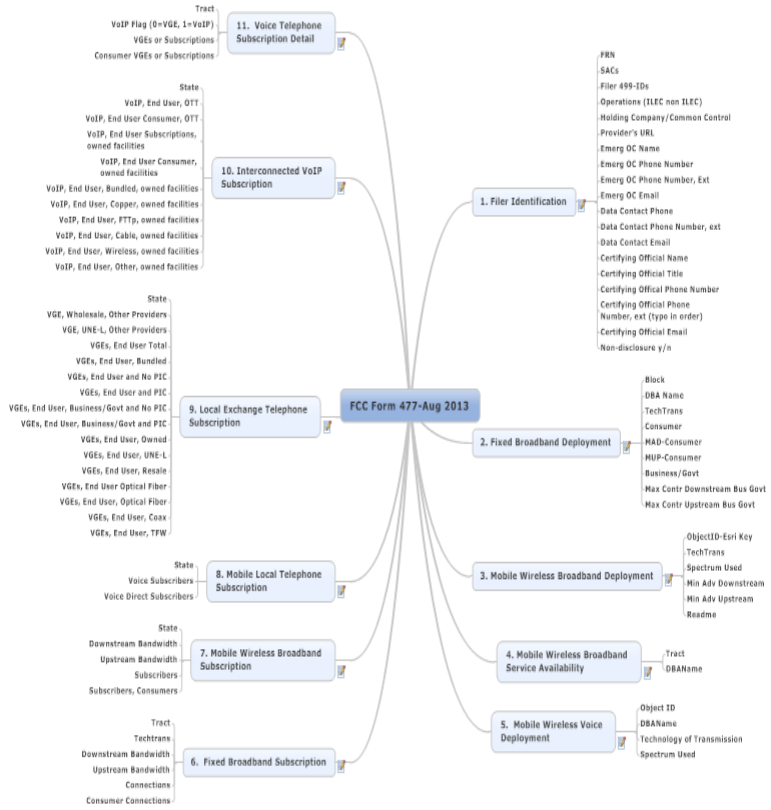
FCC Form 477

- Data collection started in 2000
- Submitted by
  - Facilities-based providers of broadband connections to end user locations
  - Providers of wired or fixed wireless local exchange telephone service
  - Providers of interconnected Voice over Internet Protocol (interconnected VoIP) service (note: including both service retailers and service wholesalers)
  - Facilities-based providers of mobile telephony service
- Monitors adoption, deployment, competition and potentially cost
- Defined Broadband as low as 200 kbps x 200 kbps
- New source for data developed in State Broadband Initiative
- Important data source for
  - FCC 706 Reports (State of Advanced Services)
  - Connect America Fund Challenge and Monitoring
  - General industry status and advocacy

Format Changes



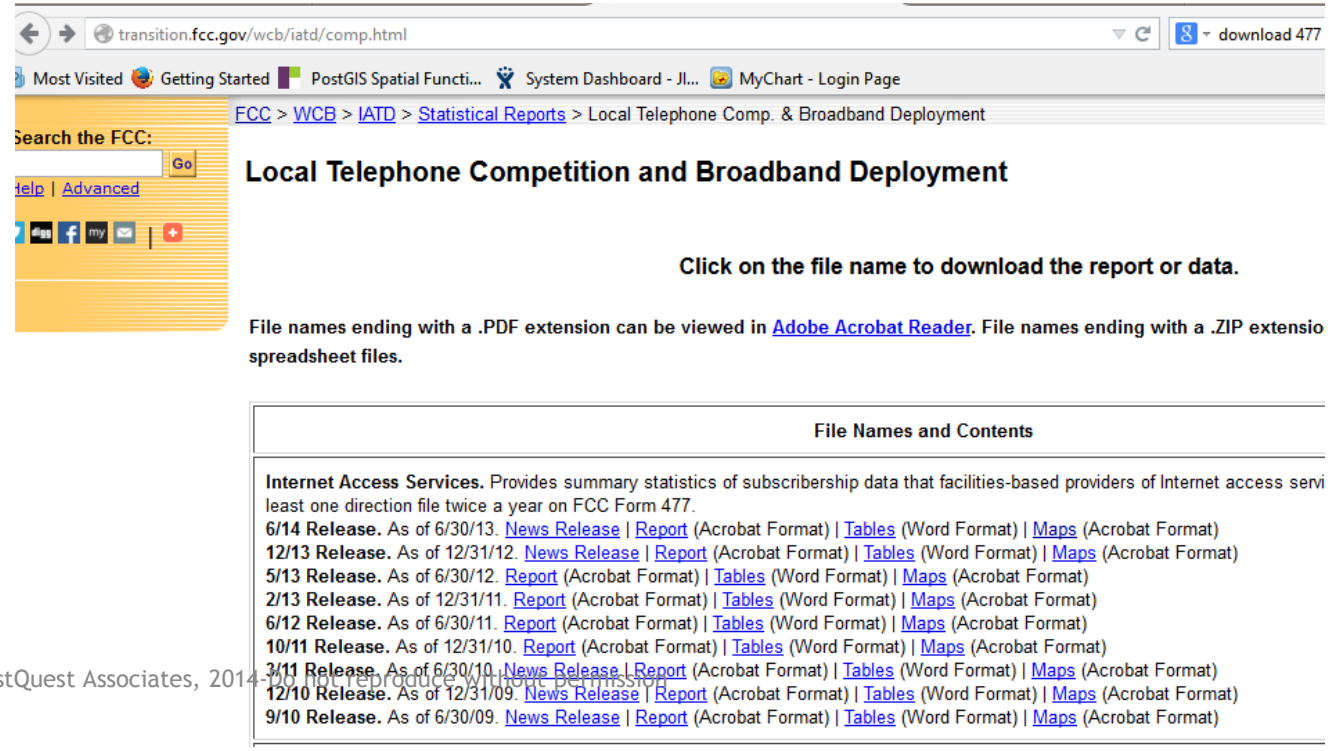
Old format



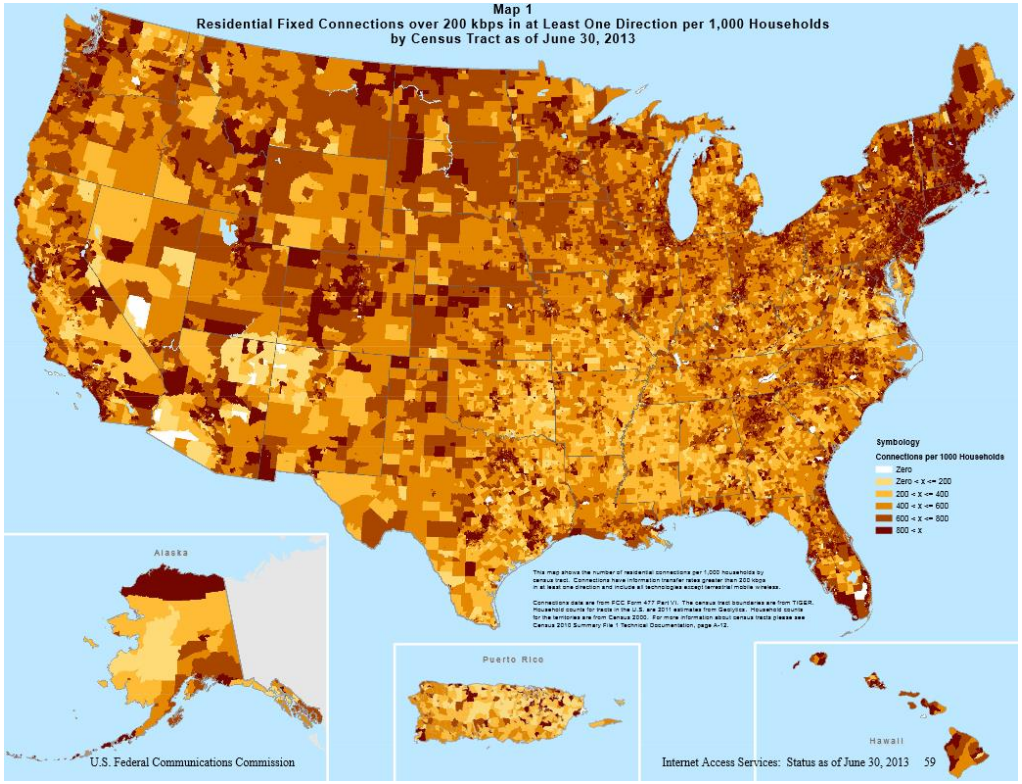
New format (Sept 2014)

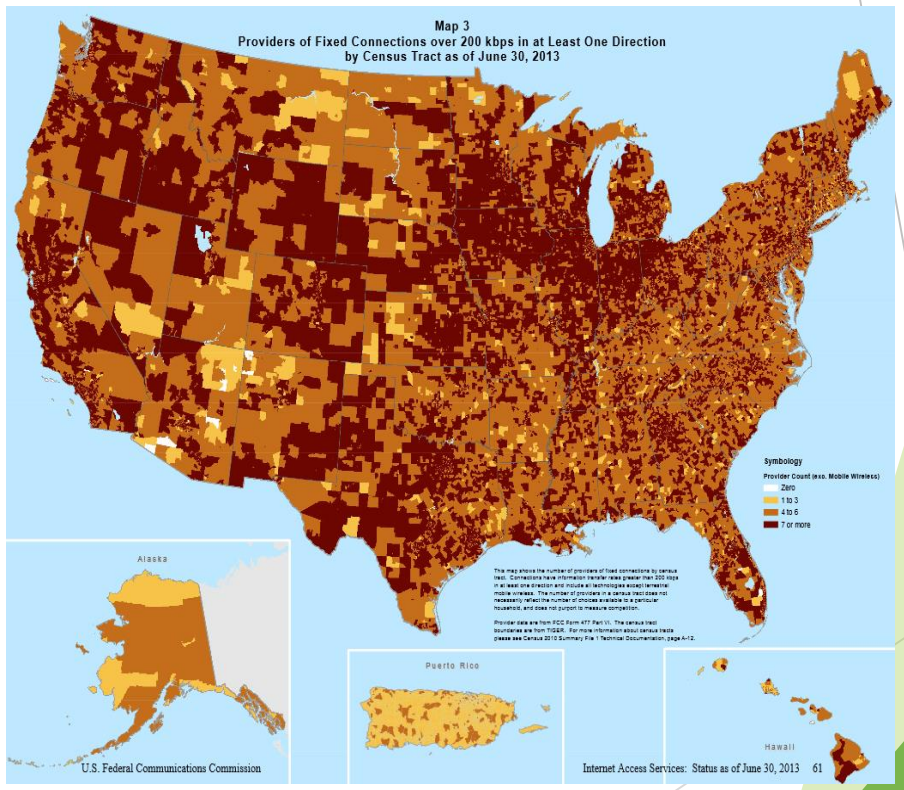
FCC Form 477 Data

- Reports
- Data Available for download; best source for subscribership information



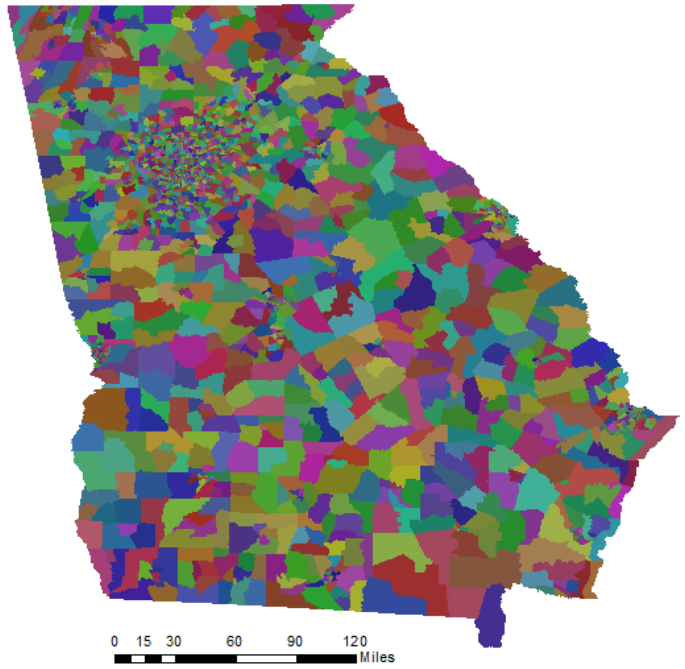
How the current tract data appear



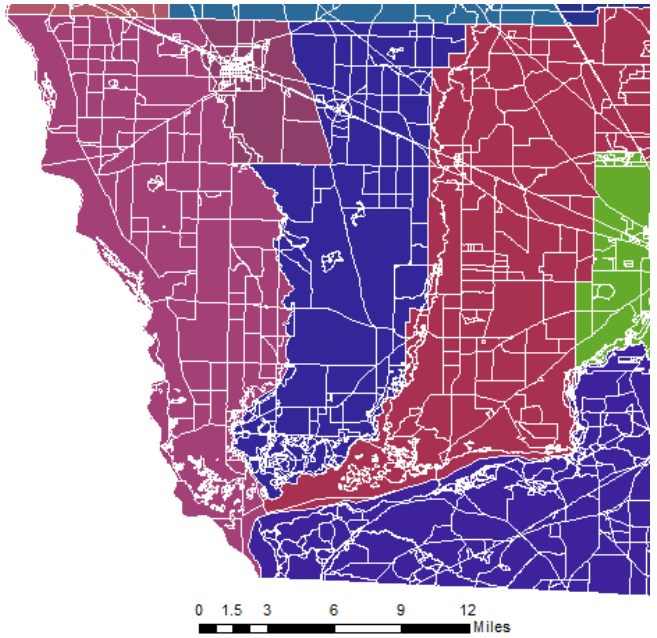


The implication of different Census ‘levels’

Tract



Block



Is broadband important?

- The $500 Billion Opportunity: Crandall and Jackson (2001)
- The Effects of Broadband Deployment on Output and Employment: Crandall, Lehr, Litan (2007)
  - 1% Increase in broadband penetration related to 0.2-0.3% increase in employment
- Broadband Data Improvement Act (2008)
  - Compile list of unserved areas (FCC)
  - Impact of price (SBA)
  - Determine demographics of unserved (ACS Changes)
  - Make International Comparisons (FCC)
  - Make grants available to States (DoC)
  - Create a web page to aggregate state grant information (DoC)
  - Unfunded…

Stimulus Act of 2009 (ARRA)

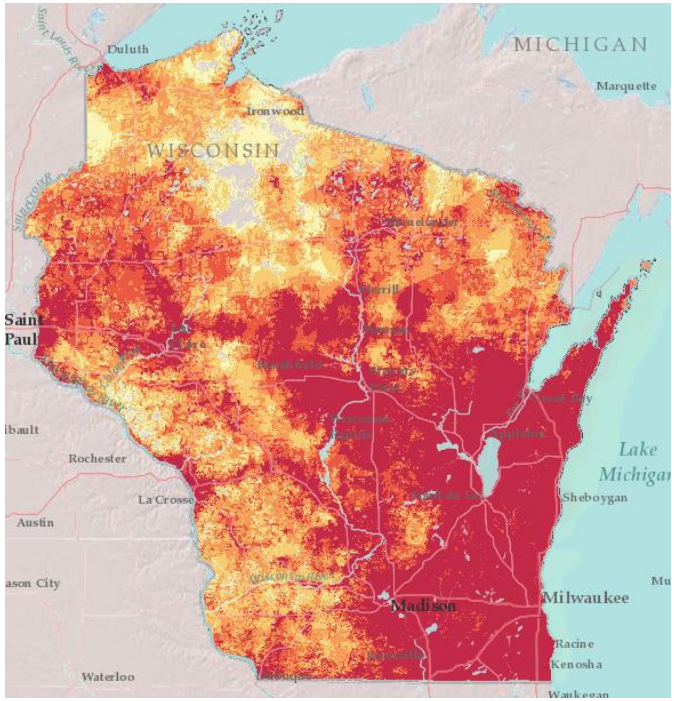
- State Broadband Initiative (2009-2014 DoC/NTIA)
- National Broadband Plan (2009-2010 FCC/OBI)

State Broadband Initiative (f/k/a SBDD) 2009-2014

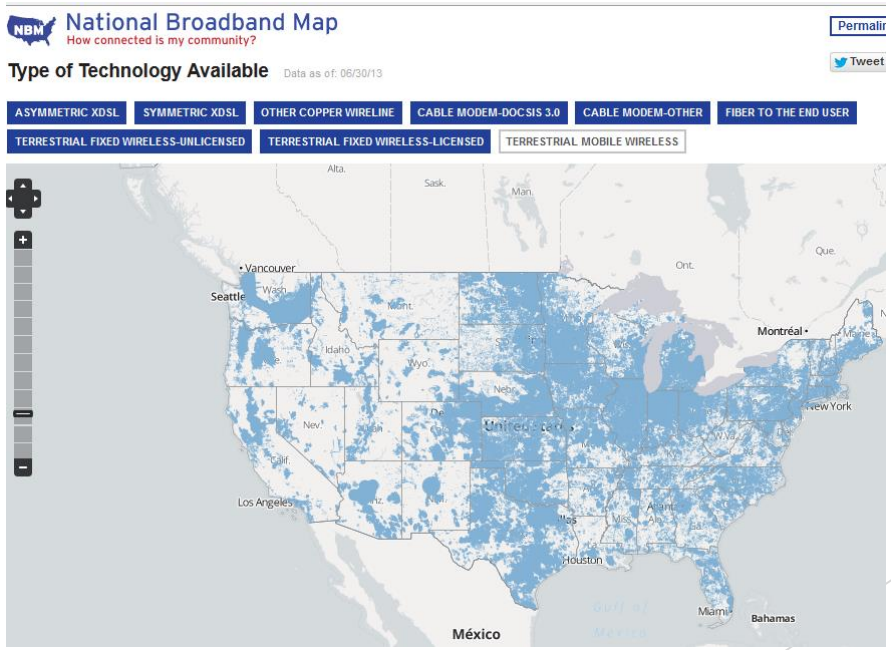
- States or Grantees approved by States collected broadband deployment information
  - 56 entities
- Contacted facilities based providers
  - Mobile wireless
  - Fixed wireless
  - Fixed wireline
  - Satellite
- Translated advertised coverage into a normalized format that could be used for mapping and analysis
  - Census Blocks (**)
  - Roads (if the area covered is > 2 sq mi)
  - Address Points
  - First ever consolidated view of service coverage patterns (satellite, mobile and fixed wireless)
- Included Mapping, Planning, Adoption, Technology Transfer Components

State Broadband Initiative

State Maps (linkamericadata.org)



National Broadband Map www.broadbandmap.gov



SBI Data Model is different by provider

Wireline are in terms of blocks, address or roads

Wireless is in terms of coverage areas

The differences in provider submissions drive some of the differences you see in the map to the right.

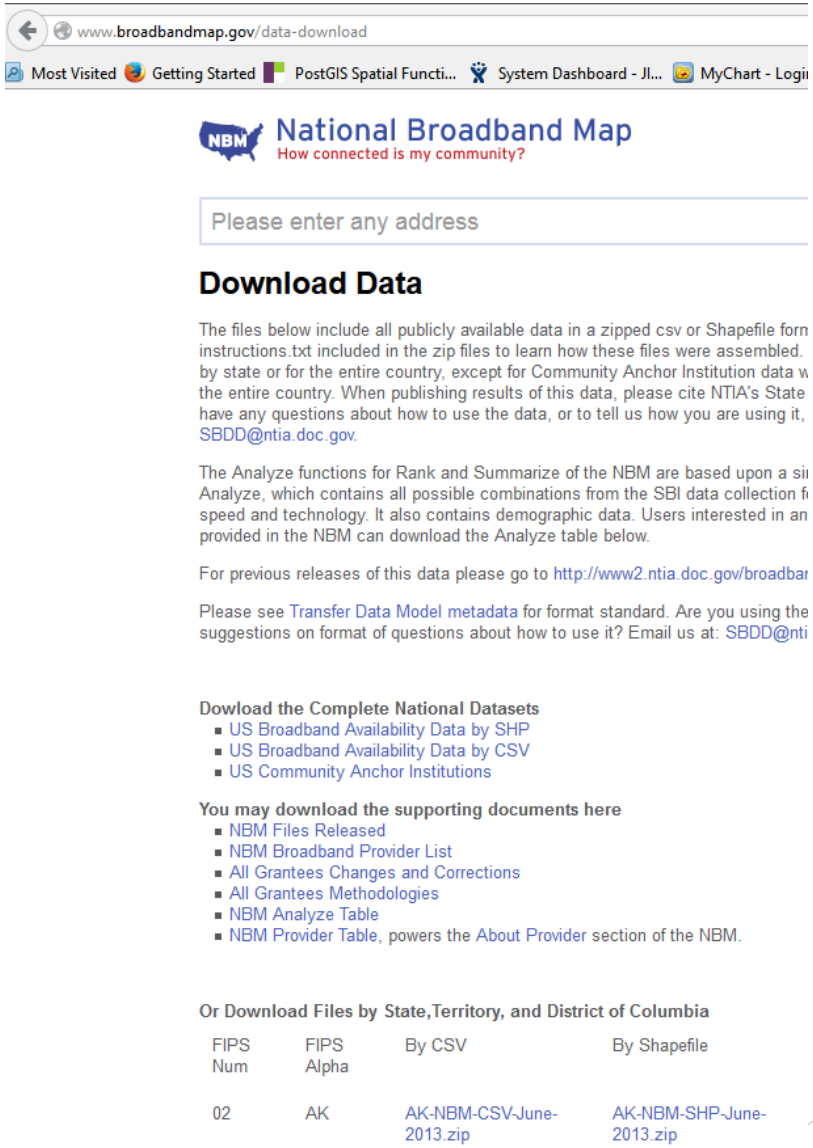
Four Ways to Retrieve SBI Data

Text (CSV files), covered Census Blocks

Geographic (SHP format), somewhat modified to maintain confidentiality in data (address and road points). Grouped by speed and technology of transmission.

Analyze table (pre-baked comparisons)

API Call
(http://broadbandmap.gov/developer)



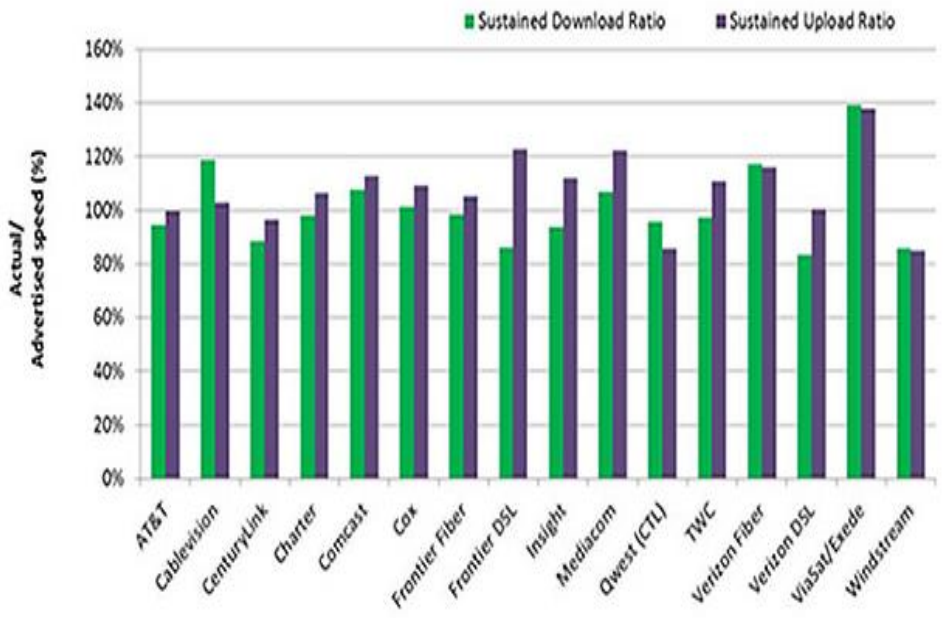
National Broadband Plan (2009-2010) (broadband.gov)

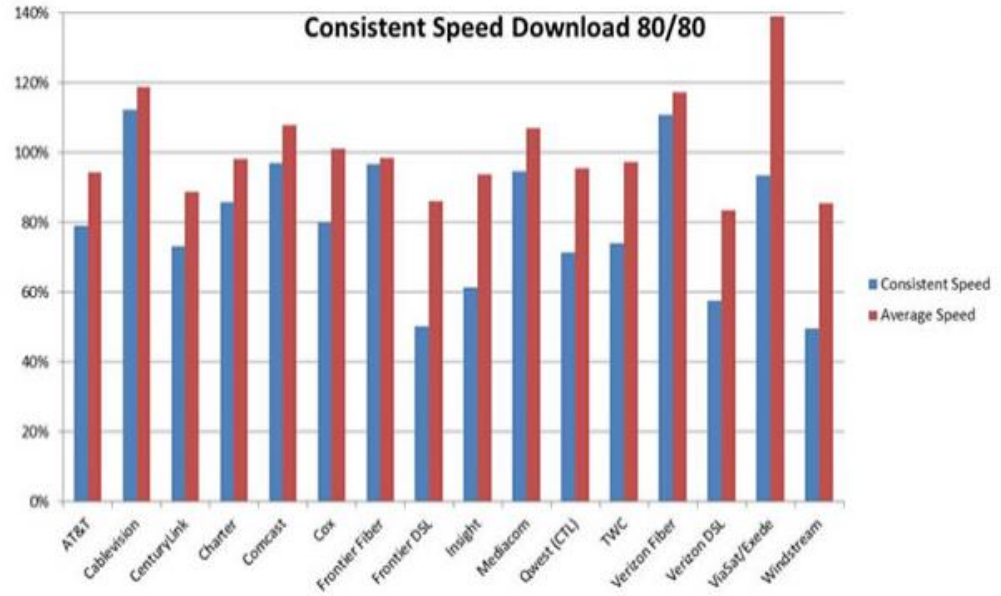
- Requested by Congress as part of Stimulus legislation.
- At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second by the year 2020.
- The United States should lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.
- Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.
- Every American community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions such as schools, hospitals, and government buildings.
- To ensure the safety of the American people, every first responder should have access to a nationwide, wireless, interoperable broadband public safety network.
- To ensure that America leads in the clean energy economy, every American should be able to use broadband to track and manage their real-time energy consumption.

Speed and Service Quality

- FCC has established two testing mechanism for Internet speed.
- Mobile Speed Test App (iOS, Android)
- White box testing (Samknows)
  - Uses off the shelf routers with Open Source software to perform measurement
  - Report is in its third release, goal is yearly publication.

Speed Test Results (2014)





FCC Order 11-161 (Released 11/2011)

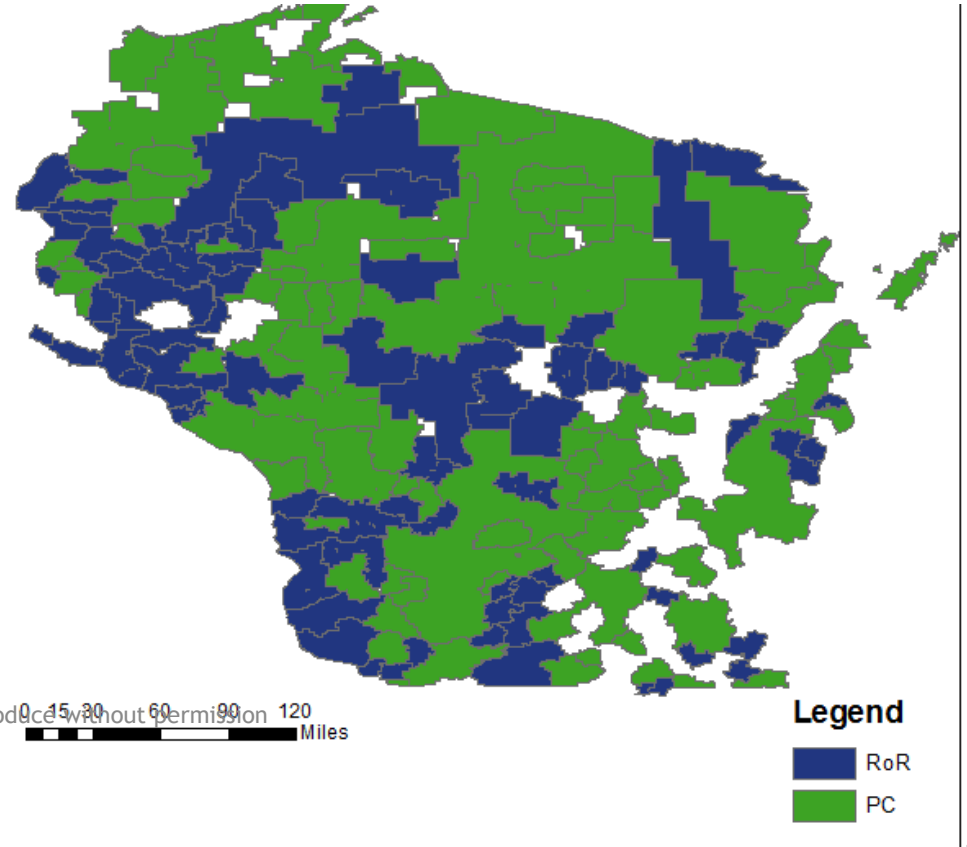
- Reforms and modernizes Universal Service and Intercarrier Compensation

  "to make "available ... to all the people of the United States ... a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges." (2)

- "Networks that support only voice service, however, are no longer adequate for the country's communication needs"(2)
- "The component of the Universal Service Fund that supports telecommunications service in high-cost areas has grown from $2.6 billion in 2001 to a projected 4.5 billion in 2011, but recipients lack any obligations or accountability for advancing broadband-capable infrastructure" (7)
- "The Fund supports some mobile providers, but only based on cost characteristics and locations of wireline providers. As a result, the universal service high-cost program provides approximately $1 billion in annual support to wireless carriers, yet there remain areas of the country where people live, work, and travel that lack even basic mobile voice coverage, and many more areas that lack mobile broadband coverage"(8)
- "USF and ICC are both hybrid state federal systems, and it is critical to our reforms' success that states remain key partners even as these programs evolve and traditional roles shift.(15)

Price Cap versus Rate of Return

- For most purposes in CAF a provider is either Price Cap or Rate of Return (PC or RoR). This is a classification of their regulatory framework.



Connect America Fund Universal Service (USF) Reform

- Budget; High cost to be 4.5 billion per year
- Public Interest; move from voice only to broadband and voice
- Connect America Fund
  - Differentiates between Price Cap and Rate of Return Carriers
    - 83% of unserved Price Cap
    - Rate or Return serve the most expensive areas
  - Phase I, $300 Million to Price Cap carriers to offer 4 Mbps x 1 Mbps upstream
  - Phase II, Model based and competitive bidding
    - Supports only areas not served by competitive provider (Cable or Fixed Wireless)
    - Five year build out/performance process
    - If incumbent declines, then the area can be bid out.
    - PC Budget 1.8 billion per year

Connect America Fund USF Reform

- Rate of Return
  - Budget $2 billion annually
  - Change in many mechanisms (reduce HCLS in low rate areas, phase out Safety Net, etc. phase out support in competitively served areas, cap per-line to $250/month, potential change of Rate of Return from 11.25 Percent
  - Used Quantitative Regression Analysis (QRA) as cost-measurement mechanism

Connect America Fund USF Reform

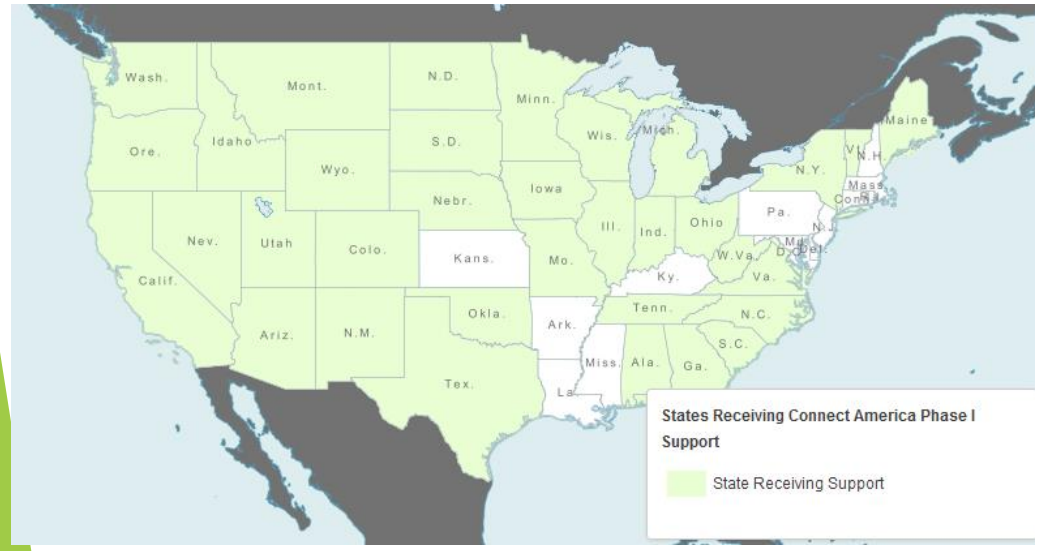
- Mobility Fund (4G in 3 years or 3G in 2 years)
  - Phase 1, $300 Million one-time
  - Phase 1 Tribal, $50 Million
  - Phase 2, $500 Million per year
  - Phase 2 Tribal, $100 Million per year
- Remote Access Fund
  - $100 Million per year to cover areas where terrestrial broadband network cost is extremely high.

Connect America Fund

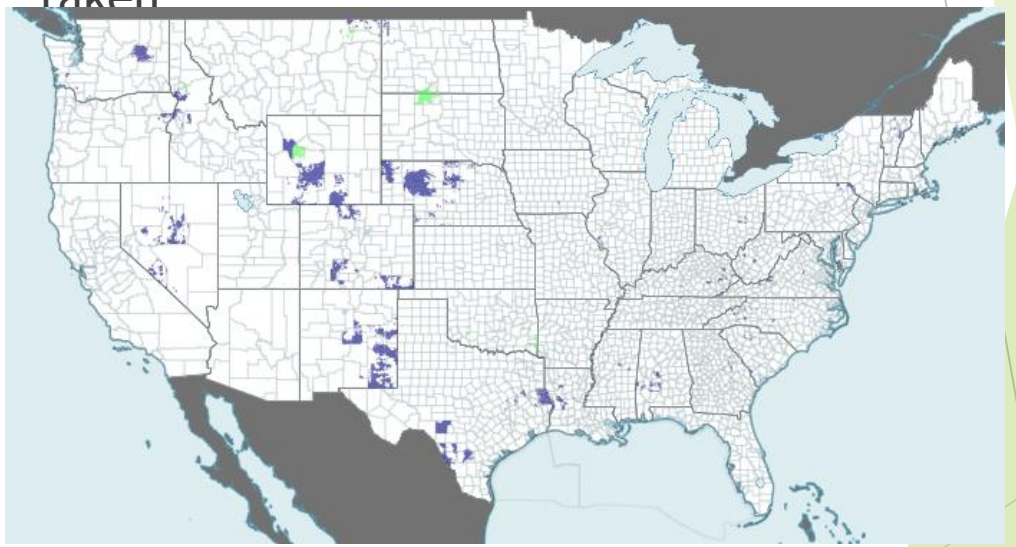
- Multiple changes to intercarrier compensation
  - Not going into much detail
  - Moves to Bill and Keep
  - Allows an Access Recovery Charge to offset ICC revenue declines

Connect America Fund Status

- CAF Phase 1, went into two rounds



- CAF Phase 1, Mobility $300 Million taken

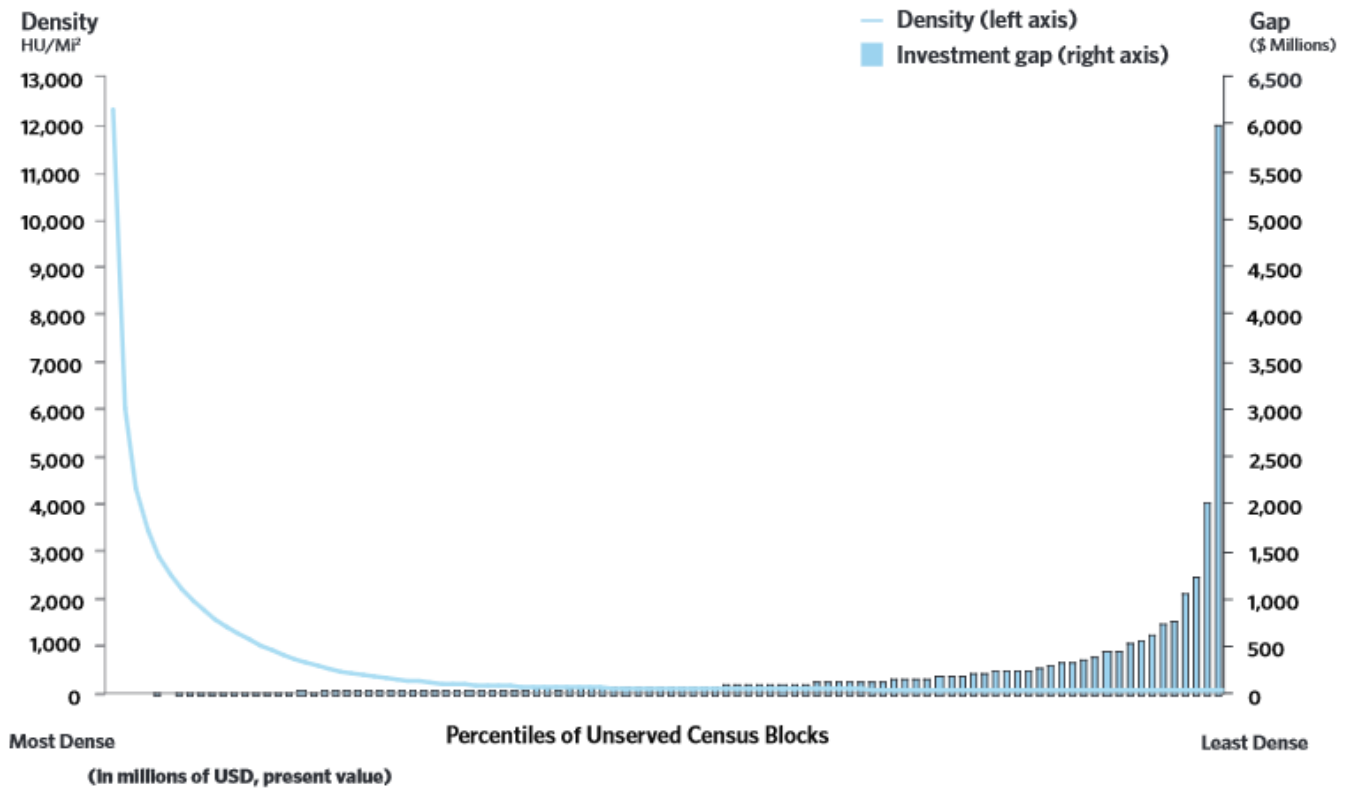


Connect America Fund (Spring/Summer 2014)

- Adopted inputs for PC carriers
- Adopted cost measurement and support mechanism for PC carriers
- Eliminated Quantitative Regression Analysis For Rate of Return
- Began Process to Determine Rate Comparability

Network Economics

Exhibit 1-C:
Gap by Census Blocks Ordered by Population density



Source: OBI Technical Paper 1

Connect America Phase II Model Adopted Results

Federal Communications Commission
CAFII - CAM 4.1.1 - Report Version 7.0
Results with Funding Benchmark of $52.50, Extremely High Cost Threshold $207.81
April, 2014

State	Price Cap Carrier	Price Cap Study Area	Price Cap SAC	Total Price Cap Locations	Total Number of Price Cap Locations in Census Blocks Subject to Offer of Model-Based Phase II Funding	Total Number of Locations in Column F Census Blocks Lacking 3/768	Total Number of Price Cap Locations in Census Blocks Above Extremely High Cost Threshold	Percent - Price Cap Locations Above Extremely High Cost Threshold / Total Price Cap Locations	Offer of Support to Price Cap Carrier
PC Sub Total	PC Sub Total	PC Sub Total	PC Sub Total	-	-	-	-		$ -
PC State SubT	PC State SubT	PC State SubTotal	PC State SubTota	2,751,002	225,934	134,100	11,698	0.43%	95,615,350
PC Nationwide	PC Nationwide	PC Nationwide Total	PC Nationwide T	153,990,014	4,245,611	2,722,888	577,013	0.37%	$ 1,781,926,273
WI	WI	WI	WI	2,751,002	225,934	134,100	11,698	0.43%	95,615,350

Offered support in Wisconsin for AT&T, CenturyLink and Frontier
Service requirements to be 4/1 by end of third year, 6/1.5 to some number of locations by end of 5th year *** may change
Latency low enough for VoIP
100G per Month
See: http://www.fcc.gov/encyclopedia/price-cap-resources

CAF Phase II, Challenge Process

- Provides opportunity for price cap carrier to challenge the Census Block level coverage used in cost determination
  - Does a competitor exist (cable or fixed wireless)
  - Do they offer voice services
  - Must be certified by corporate officer
- Due August 14
- Then the competitors have 45 days to respond
- FCC reviews, then re-runs the cost model to finalize the offer of support

Universal Service Comparability Benchmark for fixed Broadband Services

- To receive support recipient must offer 4 Mbps x 1 Mbps service at reasonably comparable rates
- What is reasonably comparable? (6/30/14)
- Proposed an average plus 2 standard deviation method; using weighted linear regression to generate the average
  - $68.48 (100 Gb)
  - $71.84 (unlimited)

Rural Broadband Experiments

- FCC Authorized Voluntary Experiments as part of Technology Transitions Order
  - Novel technology to support broadband networks in rural networks
  - Open to all meeting service standards
  - 1000 expressions of interest received (19 in WI)

As of 4/25/2014			
Filer Name in ECFS	Pages Filed in ECF	Entity Name (if different than Filer Name in ECFS)	State(s
Mt Horeb Telephone Company	2		WI
MH Telecom, LLC	2		WI
CTC Telcom, Inc. dba Mosaic Telecom	3		WI
Cuba City Telephone Exchange Company, Inc.	2		WI
Chippewa Valley Electric Coop	7		WI
Belmont Telephone Company, Inc.	2	CS Technologies	WI
Access Wisconsin Group	7		WI
Amherst Telephone Company	2		WI
Wood County Telephone Company	2		WI
Vernon Communications, LLC	2		WI

Connect America Fund, Coming Attractions

- With release of 7th Report and Order, Further Notice of Proposed Rulemaking covering
  - Rate of Return Mechanism
  - Changes to speed requirements (10 x 1)
    - Allow any technology that can provide service requirements
  - What the competitive bidding process will look like (if carrier declines model based support, by end of 2014)
  - Modifications to mobility fund (LTE)
  - Changes to RAF fund (2016). What areas can be bid and what is their cost profile?

Schools and Libraries, Coming Attractions

- eRate Modernization
- WiFi initiative
- ConnectED
- New reports

Questions?

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